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ABSTRACT

This book presents a comprehensive and detailed theory of early human development based on the principles of dynamic systems theory. It raises fundamental questions about prevailing assumptions in the field and proposes a new theory of the development of cognition and action, unifying recent advances in dynamic systems theory with current research in neuroscience and neural development. Following the introduction, chapter 1 explores the ontogeny of erect locomotion. Chapter 2 offers an overview of current theorizing about cognitive development. Chapter 3 introduces the concepts of nonlinear dynamic systems in general terms and chapter 4 uses the example of learning to walk to elaborate a dynamic approach to development. The next three chapters bring dynamic principles into issues of process and mechanism. Chapter 5 begins with a discussion of the dynamic nature of the brain, followed by an extended explication of Edelman's theory of neuronal group selection. Chapter 6 discusses the philosophical nature of categories, showing the fundamental dynamic properties of categories of thought and action and their development. Chapter 7 reviews evidence from human infant studies for the process of development as dynamic selection. Chapter 8 addresses the question of context specificity, and chapter 9 covers variability and selection. Chapter 10 examines the emergence of novelty, specifically the phase shift in the so-called A-not-B theory of late infancy. The final chapter offers concluding remarks and addresses issues and implications of the proposed developmental theory. Contains over 500 references. (TJQ)

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